

# **T** News Letter **TDARS**

G3ZME  
G6ZME

**TELFORD AND DISTRICT AMATEUR RADIO SOCIETY**

[www.TDARS.org.uk](http://www.TDARS.org.uk)

FOUNDED 1969

[www.TelfordHamfest.co.uk](http://www.TelfordHamfest.co.uk)

Issue 282

Feb/March 2018

[www.TDARS.org.uk](http://www.TDARS.org.uk)

## *Programme*

[www.telfordhamfest.org.uk](http://www.telfordhamfest.org.uk)

- January 24**     *Winter Projects Update: #2 (Bring along whatever . . .)*
- January 31**     *10 Minutes Topics (or even 2 minute topics:)*
- February 7**     *Committee Meeting & GX3ZME on the air*
- February 14**    *Bowls Social Evening with the LWWH Bowls Club*
- February 21**    *Contest & Portable Events Planning 2018. Also short talk/video*
- February 28**    *Under-a-Fiver construction competition. Those little projects. . .*
- March 7**        *Committee Meeting & GX3ZME on the air*
- March 14**       *Main Construction Competition. 2 Trophies to be won !*
- March 21**       *Guest Speaker RSGB President Nick Henwood G3RWF*
- March 28**       *Annual General Meeting 8pm. Annual Subs Due. Agenda Page 3*
- April 4**         *Committee Meeting & GX3ZME on the air*
- April 11**        *Dave Brooks G4IAR: The Worked All Britain (WAB) award programme*
- April 18**        *Marconi Day (IMD—GB8MD) Preparations. (Tywyn, April 20-22)*
- April 20-22 (Fri-Sun.)** *GB8MD TDARS on the Welsh Coast @ Marconi Cottages.*
- April 25 (Provis.)** *Talk by Richard G0VXG. TBC.*

**For Amateur Radio Exam Training—enquiries to Mike G3JKX (01952 299677)**  
**For Morse Training and Morse Proficiency Tests Martyn G3UKV or Eric M0KZB.**  
**For Equipment Loans & Returns contact Don M0TBQ.**  
**Radio Amateur Exams- Latest: [www.tdars.org.uk/html/training.html](http://www.tdars.org.uk/html/training.html)**

## Editorial

The open Forum held at the club at the beginning of January was an interesting session. I counted about 26 suggestions that were put forward, of which about ten were new, or at least an extension of a previous activity. These included:-

- Becoming involved in the 50th Telford celebrations this year
- Visit to Friedrichshafen (Germany) Radio Show, June 1-3rd, + huge Maker Faire, Bodensee
- An HF Contest entry, perhaps at same time as a major meteor shower (data modes?)
- Paul M0PLA resuming his famous SOTA excursions from January 20th
- Twinning with German DARC club in Marburgh (G0YDT)
- Special Event Station at outside events—eg RAF Shawbury, Cosford, Re-enactment event
- Get together with Shropshire Astronomical Society to share common interests
- Invitation to WAB (Worked All Britain) club speaker. (Now booked April 11th, G4IAR)
- Visit Stafford ARS who also meet Wednesdays—maybe joint DF hunt ?
- Set up an antenna testing range for 2 metres and up (M0HMO)
- Persuade more members to actually operate radios at TDARS outside events.

There are enough ideas there to occupy the committee's time—and more importantly, for ALL members to take part in, and contribute to. 2018 should be another good year for the club.

**MIV**

~~~~~  
**TELFORD & DISTRICT AMATEUR RADIO SOCIETY**

**CHAIRMAN:** Eric Arkinstall M0KZB (01743 240286)

**VICE-CHAIRMAN:** Martyn Vincent G3UKV (01952 255416)

**SECRETARY:** John Humphreys M0JZH (07824 737716)

**TREASURER:** Jim Wakenell G8UGL (01952 684173)

**CURATOR** : Don Nicholls M0TBQ (01952 411680)



**NEWSLETTER EDITOR:** Martyn Vincent G3UKV (01952 255416)

**PUBLICITY/WEBMASTER :** Dave GOCER (01630 638699 or 07971 416940, leave msg)

**Committee:** Simon G0UFE; Brian G6UDX; Paul M0PLA; Graham G7LMF; Village Hall Committee Liaison officer Martin 2E0TRO. QSL Manager Paul M0PNN; Assist Curator: Mike G6DFD; Trophies/Certs: Martyn G3UKV.

[illegible]

**From Mike G6DFD** . . . . [Mike suggested that members, particularly those new to amateur radio, might like to share their story with others in the club—Ed]

“ Not sure ‘Newcomers’ will volunteer their information. I’ve lived in Shropshire since 1988 and I’ve noticed they are more reserved; they value their privacy more than city people.

So I'm volunteering Chris.....His Details:

Chris Shipman 2E0EOH Lives in Madeley, Telford and works locally.

He recently passed both the Foundation and Intermediate exams on the same night and was taught by our own Mike Smart. So never had a M6 call sign, he went straight for the 2E0. His first purchase was a Chinese handheld (almost compulsory with new hams) and then bought a mobile 25 watt direct from China. His first antenna was a borrowed collinear, kindly lent to him by Malcolm 2E1DYL. Chris said he fitted into his loft on the same day he got it. He was so keen to get on the air, but plans to fit it outside when he has brackets and ladders. His first QSO was on the monthly club net where he worked GX3ZME via GB3TF. Chris plans to branch out into HF when he's earned his stripes on 2 metres, but can't wait to work the world. Give Chris a shout if you hear him on VHF and welcome him to the hobby and our club. “

# Qtc: News & Information



**TDARS MEETINGS EVERY WEDNESDAY AT LITTLE WENLOCK VILLAGE HALL UNLESS INDICATED OTHERWISE ON THE FRONT PAGE PROGRAMME. ROOM BOOKED FROM 7PM - 10PM.**

**If Junior Hamsters group meeting, please do not enter before 7:45pm MEETINGS USUALLY COMMENCE AT 8PM**

**Please note: A current membership card must be shown to borrow TDARS equipment. Please return borrowed equipment promptly .**

**The TDARS AGM takes place on WEDNESDAY 28 MARCH at 8pm.**

## **AGENDA :**

- 1) Apologies**
- 2) Minutes of AGM held 29 March 2017, and Matters Arising**
- 3) Chairman's Report**
- 4) Treasurer's Report & presentation of accounts. 2018/19 subscription rates**
- 5) Appointment of Auditors 2018/19**
- 6) Election of Society Officers and committee**
- 7) Presentation of Awards and Trophies**

Any other items for inclusion in the Agenda must be sent in writing to the Hon. Secretary, John M0JZH, at least a week before the AGM.

At the AGM, various **trophies are awarded**. These are as follows with last year's winners (2017) in brackets.

**Jack Hassall Trophy.** For services to tdars over the previous year (M0KZB)

**Syd Poole Trophy.** For operating on-the-air in the best spirit of amateur radio (M0PLA)

**Main Construction Trophy.** (M0HMO, G8AQA joint project)

**Beginners' Construction Trophy.** (no entries 2017)

**Under-a-Fiver Construction Trophy.** (G8VZT)

**Direction Finding Trophy.** (not awarded 2017)

**Kippure Trophy.** Spoof trophy—not publicised. By tradition, left in storage!

The 2017/18 TDARS committee choose a winner for the Syd Poole Trophy.

The **TDARS Forum for ideas** took place on Wed. January 3rd. It lasted almost until 'kicking out' time, and covered a wide range of topics from general ideas for progress to specific weekly meeting suggestions. The list of NEW ideas or development of existing ideas, is listed on page 2 of this Newsletter. Already some aspects have been taken up, or are being pursued behind the scenes.



The **talk by Barry Cook (G8PHG)** was a fascinating insight into the challenges and practicalities of building a substantial satellite for launch that will survive a harsh space environment. The project took several years to complete, and although planned for launch from India in 2014, it was not until July 2017, with a launch from Kazakhstan that the dream became reality. Barry is currently building an SDR receiver to decode the data that comes from 600Km up in earth orbit from the 'Flying Laptop Satellite.'

Congratulations to Paul, M0PLA, after a serious illness over several months, for his successful **SOTA trip up the Stiperstones** (G/WB-003) in cold, snowy, icy conditions (Jan.20). He had planned to also operate from Long Mynd, but the N.T. had closed access via the Burway for safety reasons. His fellow SOTA compatriots included Jamie (M6SZF—just licensed), John (M0JZH), and Simon (G0UFE), and they operated on 2m (SSB and FM) and HF (20m).



The overall **2017 results from the Tues/Thursday UKAC** evening contests are now out, and TDARS came 12th out of 35 'local' UK clubs who entered. Thanks to Dave CER, Paul PLA, Don TBQ, Martyn UKV, John JZH, Norman ASP, Jim UGL, Paul PNN—all of whom entered at least one session during the year. We were active on all 9 eligible bands from 6 metres to 3 cm. Six and two metres were supported the most (7 members active both bands), whilst only Martyn entered on 23cm and the upper four microwave bands. Place results as follows:

**6m** 11th of 29, **4m** 10th of 26, **2m** 12th of 34, **70cm** 31 of 32, **23cm** 16th of 24 and the **uW** 7th of 10.

**GB17YOTA** took place on Friday 29th December at Longdon-on-Tern Village Hall. It was great to see so many TDARS members getting involved—I counted 15 in all. Especial thanks to Simon 'UFE and John 'JZH who gave of their time and energy in setting up (and later removing) the HF aerials on the mobile mast in the adjacent muddy field, and also to Paul 'PNN for getting a Slow Scan TV TX/RX station on nanowave (light) frequencies operational across the Village Hall. Thanks also to Dave 'VZT for loan of equipment. Heather M0HMO put on several laptop/PC radio based demonstrations which were most impressive. Other activities included a morse table, make-a-megaphone, help yourself freebie table, pair of working field telephones, FT817 and whip antenna with RPi remote control via tablet and David's (M0YDH) digital ATV project. Great day, even though rather few visitors (so soon after Christmas?)

We had about 36 QSOs, mostly on 20, 40 and 80 metres using GB17YOTA. The Club's IC7600 + PA put out the legal maximum (400 watts), together with an 80m doublet and Comet HF antennas outside.



Ben Copeland SWL (scout) watching data satellite reception on a laptop with £6 RTL dongle and Heather M0HMO.



Ben also had a go with GB17YOTA, guided by Martyn G3UKV



Simon checks 2m circular polarisation antenna. (Heather M0HMO, Simon G0UFE, Paul M0PNN)



Time to relax: Eric KZB, Martin TRO, Jim UGL, John JZH, Eric KZB, Graham LMF



Paul 'PNN successfully used Dave 'VZT's nanowave gear to transmit and receive SSTV on a laptop.  
Below: Dave' M0YDH Digi TV project



Simon G0UFE gives the club's equipment an airing.



Matty ('PNN's Jnr Op) examines and approves the nanowave (light) equipment



## An interesting question about Standing Waves by Mike G3JKX

A TDARS member, Paul Woodfin, found this question about Standing Wave Ratios in the 'Exam Secrets' book by Alan Betts. It took me quite by surprise. The question is well worth studying and went something like this:

'A coaxial cable feeds a dipole. Half the power is reflected due to mismatch. What ratio will an SWR meter read? The 4 answers are 1:1, 2:1, 3:1 or 6:1. Suppose the Tx output to be 10W, so 5W is being reflected. The average ham will say, "10W forward power with 5W reflected, therefore the SWR is 2:1". Sorry, quite WRONG!

Then you remember seeing a SWR formula looking something like this :  $SWR = \frac{Fwd+Ref}{Fwd-Ref}$ . So put the figures into this and do the maths again.  $SWR = \frac{10+5}{10-5} = 15/5$  i.e 3:1. Sorry WRONG again!

The problem? We are using the INCORRECT terminology! SWR should be **VSWR**. Voltage SWR. VSWR meters measure Forward & Reflected VOLTS, NOT POWER.

So **VSWR = Fwd volts + Ref volts/Fwd volts - Ref volts**

To find the Voltages we need to know the coaxial cable impedance Z. Let's say it's 50ohms.

(Had you noticed that Z is not stated in the question?)

The Power formula using P, V & Z is  $P = \frac{V^2}{Z}$ . However we need  $V^2$  on its own, so must multiply both sides of the equation by Z. This gives  $P \times Z = \frac{V^2 \times Z}{Z}$ .

Z divided by Z is 1 so  $PZ = V^2 \times 1$  or  $V^2 = PZ$ . Put in the figures for P & Z so  $10W \times 50\Omega = V^2 = 500v$

But we need V, not  $V^2$ , so we must take the Square root of both sides, making  $V_{fwd}$  22.36v.

At this point it is very tempting to take half of this value as the reflected voltage and calculate the SWR formula using that. ANOTHER MISTAKE. The maths has to be done again using the Reflected Power of 5 watts. ( $V_{Ref}$ ).

$P = \frac{V^2}{Z}$  so  $PZ = V^2$  or  $V^2 = PZ = 5W \times 50\Omega = 250v$

The square root of 250v gives a  $V_{Ref}$  of 15.81 volts! (Certainly not half of the 22.36v Forward voltage)

The real formula is  $VSWR = \frac{V_{Fwd} + V_{Ref}}{V_{Fwd} - V_{Ref}}$ .

Putting in the calculated figures into this formula,

$VSWR = \frac{22.36v + 15.81v}{22.36v - 15.81v}$

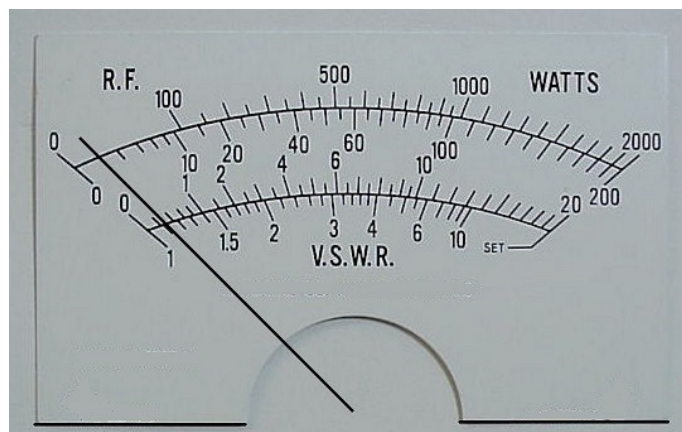
$VSWR = \frac{38.17v}{6.55v}$  which is a VSWR of **5.83 : 1**

The exam book gives the correct answer as 6:1—  
However 5.83 : 1 is accurate !

This all works with ANY impedance figure because  $Z/Z$  will always be 1! Best to leave this kind of question in an exam and only attempt it if there's time left at the end.

73 Mike G3JKX

PS Now you know that you have a **VSWR** meter !



**Thanks for Newsletter input this time:**

**Mike G3JKX, Mike G6DFD, Graham G7LMF, John M0JZH, Heather M0HMO**

**Next edition After AGM : Please keep it coming-contributors make the difference!**



# **WABEMA Award - My first mobile run—by Graham G7LMF**

*G7LMF/M 15th December 2017*

The **WABEMA** Award is intended to encourage WAB Expedition and Mobile Activity. In recognition of the help given to W.A.B., there is no fee for this award.

The award is issued for activating W.A.B. Squares. To do this you must make a minimum of one contact for W.A.B. purposes from each square activated and be prepared to attempt to work each station monitoring your frequency. For a square to be activated the operator, transmitter, receiver, microphone or key and the whole of the aerial must be located either on land in the square or in a vehicle in the square. If the vehicle is a boat, it must be on an inland waterway. The square must contain land at the time of activation. Only if it is not practical for the whole of the aerial to be in the square, the feed point must be in the square.

The person operating, the person navigating, the person logging and the person driving can claim activating the squares. Navigating and logging means from within the vehicle or at the portable site.

There are six classifications for the WABEMA award. Basic (100 Areas), Bronze (200 Areas), Silver (400 Areas), Gold (600 Areas), Platinum (750 Areas) and Sapphire (900 Areas).

I finally decided to bite the bullet, having first aired my intentions to go mobile at the National Hamfest at Newark to a number of members around the WAB stand I finally got around to my first ever mobile run. I had bought a triple mag mount and 80mtr whip antenna from Sandpiper (Geoff G0GWY and Sandpiper suggested that a single mag mount wouldn't be too secure with an 80mtr whip) at the Hamfest. I also bought some cable and connectors to run the power from the car battery to the rig.

Having also bought a hands free mic, Simon G0UFE helped me install the cable from the car battery into the passenger compartment of the car. We then fitted the mag mount and whip on the roof and adjusted the whip length so I got the minimum SWR at 3.760 (the preferred frequency for WAB contacts on 80mtrs.) which I managed to get to almost 1:1 so I was happy with that. I then installed the hands free mic and all seemed to be going well.



Hands free mic.



BlueTooth dongle

Last bit to do was to install a bluetooth dongle as that would give me CAT control for the rig that I would sit (temporarily) in the passenger footwell via an unused smartphone with Pocket RxTx Free installed (This is an Android application used to remotely control any CAT enabled transceiver over Bluetooth. Sorry, I'm not sure if anything similar is available for iPhones).

This effectively gives me a remote head unit that sits in a mobile phone holder on the dash of the car.

As I only have the one HF set, my trusty old Yaesu FT-897D (with LDG AT-897 Plus tuner bolted to the side) it would be this that sat beside me for my first run. I connected everything up and checked everything for one last time; everything appeared fine until I flicked the switch on the gear-lever to activate the hands free mic and unfortunately the radio powered down momentarily then powered up again! So, after a few conversations I tried and additional earth lead from the radio to the chassis of the car, that appeared to initially work but then it did it again! I plugged my fist mic into the radio and tried again, absolutely no problem this time, so I have a problem that I need to investigate further (suggestions are that it's RF getting from the handsfree mic cables into the radio so I will need to try a bit more earthing).



The last bit of kit for my mobile run was my mobile phone with Grid Reference installed (This app displays the UK Ordnance Survey (OS) Grid Reference based upon your current location.)

So, my first mobile run was about to start.

As I wasn't absolutely sure when I was going, I hadn't pre-publicised it, so off I went to the various WAB social media channels, Facebook, Facebook Messenger and the Yahoo reflector and posted, at about 09:30 On Friday 15th December 2017 that I was off on my first ever mobile run today starting at

about 10:00. I explained that I only had an 80mtr whip so I was hoping that 3.760 would play ball and that on offer, if all goes well are about 12 SJ squares.

I wasn't comfortable with talking on the fist mic at the same time as driving, so I decided that I would drive until the phone app. showed that I had gone into a new square then find somewhere to park up and then make the call. This worked well, but did somewhat extend the journey time, but Shropshire is a lovely part of the country so I didn't mind.



Pocket RxTx Free app. (screenshot)



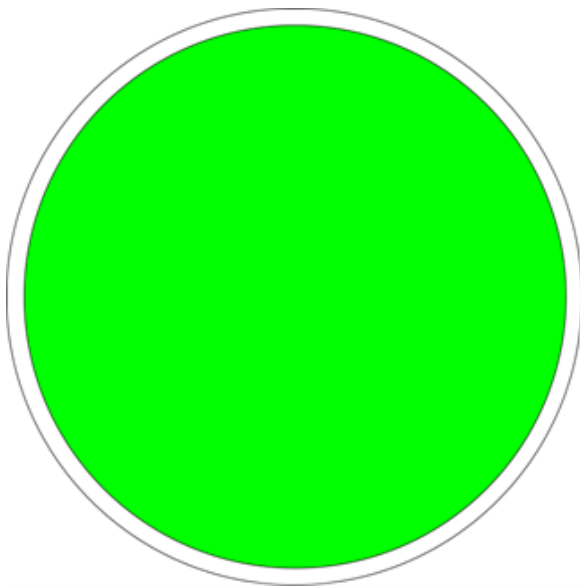
## Some Interesting Satellite Dimensions by Heather M0HMO

Altitude of NOAA 15 (weather satellite): 833 km

Altitude of the ISS: 405 km

Earth Radius: 6371 km

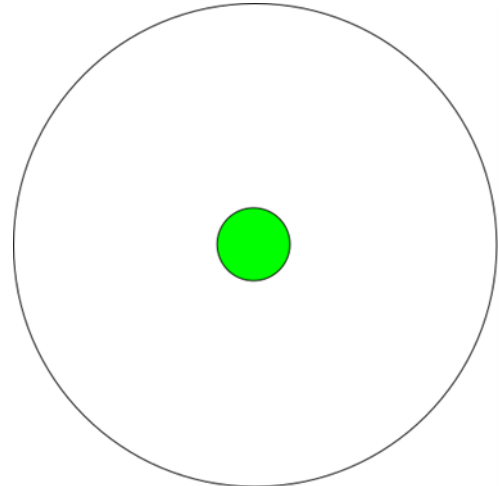
LEO (Low Earth Orbit): 160 km to 2000 km  
MEO (Medium Earth Orbit): 2000 Km to 35786 km  
GEO (Geosynchronous Earth Orbit): 35,786 Km



Scale picture of Earth (green) and the ISS orbit.



Scale drawing showing Mt. Everest (red) and The Marianas Trench (blue), ISS orbit above.



Scale of Earth and Geosynchronous orbit

This graph shows how much the atmospheric drag affects the ISS.

The boosters fire to push it back up to a good orbital height every month or so. Most of the rates of change of the descent are due to changes in solar wind.

